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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/580,120

09/11/2006

Frank Henglein

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EXAMINER

PARVINI, PEGAH

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

03/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,120	Applicant(s) HENGLEIN ET AL.	
	Examiner PEGAH PARVINI	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 and 39-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 and 39-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20071205, 20080227</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 6-10, 15, and 29 are objected to because of the following informalities: comma has been used to separate the decimal places in values claimed for the refractive indices such as in "refractive index of <1,8". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,24,486 to Schmid et al. in view of US Patent No. 6,648,957 to Andes et al.

4. Regarding claim 1, Schmid et al. teach a pigment containing substrates of aluminum or aluminum alloys which is coated with a layer of aluminum oxide or aluminum oxide hydroxide layer of 50 to 600 nm wherein it's further coated with materials such as magnetite; furthermore, there might be yet additional layer coatings as well (column 1, lines 1-15; column 3, lines 19-26, 33-36, 64-67; column 4, lines 6-11, 22, 26-36, 45-62). The reference, also, suggests the coating of silicon oxide or iron

oxide as well (column 5, lines 10-17). It is well settled in the art that iron oxide is a high refractive index material. Additionally, the reference discloses the possibility of having 1 to 99 parts based on 100 parts of the pigment containing the metallic pigment (column 5, lines 57-61).

With reference to the limitation of “obtained by chemical wet-process oxidation”, it is noted that the process disclosed by Schmid et al. is a wet-chemical process which would result in a pigment having composition as claimed in the instant application.

With reference to the layer thickness, it is noted that there is overlapping ranges of thickness between the instant application claim and the disclosed prior art, Schmid et al. Overlapping ranges have been held to establish *prima facie* obviousness; thus, it would have been obvious to have selected from the overlapping ranges of the prior art motivated by the fact that overlapping ranges have been held to establish *prima facie* obviousness. See MPEP § 2144.05.

Schmid et al. do not expressly disclose that iron oxide which is high refractive index material has a refractive index of greater than 1.8 and silicon oxide which is low refractive index material has a refractive index of between 1.35 to 1.8; however, Andes et al., drawn to multilayer pigment on the basis of platelet shaped substrate, disclose Fe_2O_3 as a high refractive index material with a refractive index value of 1.8 or more and SiO_2 as a low refractive index material with a refractive index of 1.35 to 1.8 (column 3, lines 37-55). Thus, it would have been obvious for iron oxide to have a refractive index of higher than 1.8 and for silicon oxide to have a refractive index of lower than that as the refractive indexes for these compounds are well settled in the art.

With reference to the claimed mixed layer, it would have been obvious that inter-layers form once a new layer is deposited on an already formed layer in the liquid environment of chemical wet-process motivated by the fact that the aluminum oxide layer formed via wet chemical process has a porous structure.

5. Regarding claims 2-3, and 5-8, 10, 13-21, 24, and 26, Schmid et al. disclose a coating of magnetite on the aluminum oxide which is, itself, formed on the aluminum alloy core; the reference further, discloses the other layers may be applied as well (columns 3 and 4). Furthermore, the reference discloses that the thickness of the magnetite layer may be from 1 to 25 nm and that of additional layer may be from 1 to 400 nm (column 4). Nevertheless, Schmid et al. disclose, in other embodiments, applying silicon oxide layer on the aluminum; it, further, discloses embodiments including applying iron and if desired silicon oxide or even layers of aluminum oxide or aluminum oxide hydrate (column 5). The reference, in addition, disclose that for coloristic reasons, mixtures of the metallic pigments with similarly multiply coated layers may be produced; additionally, the reference discloses the possibility of applying zirconium oxide, zinc oxide, tin oxide, chromium oxide, iron oxide, titanium oxide and more (column 5, lines 10-36). Therefore, it would have been obvious to one of ordinary skill in the art to have selected any desired alternating layers of metal oxide motivated by the fact that, as disclosed by Schmid et al., this depends on the desired color expected of the pigment and that it is well settled in the art to vary the layers to obtain desired color play of the pigment (column 5, lines 23-25, 45-47).

Although the reference does not expressly disclose that the aluminum oxide layer and the high refractive index coated layer on it do not penetrate each other, it would have been obvious that inter-layers form once a new layer is being deposited on an already formed layer in the liquid environment of chemical wet-process motivated by the fact that the aluminum oxide layer formed via wet chemical process have a porous structure.

6. Regarding claims 4 and 9, the references as combined disclose a substantially similar composition; therefore, it would be understood that said pigment composition would exhibit the specific gradient recited in claims 4 and 9 even though the references do not expressly disclose such properties.

7. Regarding claims 11 and 12, Schmid et al. disclose a thickness of 0.1 to 5 μm for the aluminum core or substrate (column 3, line 67; column 4, line 1).

8. Regarding claims 22-23, the references as combined disclose a pigment with a substantially similar composition as that claimed in the instant application. Although the references do not expressly disclose a form factor of more than 20, 25 or 40, it is understood that the properties recited in claims 22 and 23 are contained within the disclosed composition motivated by the fact that it discloses a substantially similar composition as that claimed in the instant application.

9. Regarding claim 25, the references as combined disclose a pigment with a substantially similar composition as that claimed in the instant application. It is understood that the property recited in claim 25 is contained within the disclosed composition motivated by the fact that Schmid et al. disclose a substantially similar composition as that claimed in the instant application.

10. Regarding claim 27, Schmid et al. disclose that the pigment contains at least 5wt% of the metallic pigment of the core (column 5, lines 60-61).

11. Regarding claims 28-36, Schmid et al. teach a wet chemical method through which a pigment containing substrates of aluminum or aluminum alloys is formed which is coated with a layer of aluminum oxide or aluminum oxide hydroxide layer of 50 to 600 nm wherein it's further coated with materials such as magnetite; furthermore, there might be yet additional layer coatings as well (column 3, lines 33-36, 64-67; column 4, lines 6-11, 22, 26-36, 45-62). The reference, also, suggests the coating of silicon oxide or iron oxide as well (column 5, lines 10-17). It is well settled in the art that iron oxide is a high refractive index material. Additionally, the reference discloses the possibility of having 1 to 99 parts based on 100 parts of the pigment containing the metallic pigment (column 5, lines 57-61).

Schmid et al. do not expressly disclose that iron oxide which is high refractive index material has a refractive index of greater than 1.8 and silicon oxide which is low refractive index material has a refractive index of between 1.35 to 1.8; however, Andes

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et al., drawn to multilayer pigment on the basis of platelet shaped substrate, disclose Fe_2O_3 as a high refractive index material with a refractive index value of 1.8 or more and SiO_2 as a low refractive index material with a refractive index of 1.35 to 1.8 (column 3, lines 37-55). Thus, it would have been obvious for iron oxide to have a refractive index of higher than 1.8 and for silicon oxide to have a refractive index of lower than that as the refractive indexes for these compounds are well settled in the art.

Schmid et al. disclose that the layers of the multiply coated pigment are produced through wet-chemical process by hydrolysis of organic silicon and/or aluminum compounds in the presence of organic solvents such as ethanol, isopropanol, and more; Schmid et al., further, teach that it is preferable to carry out the reaction in the presence of an acid or base as a catalyst (column 3, lines 19-26; column 6). Moreover, water is added in adequate amount which is required stoichiometrically for the hydrolysis but preferably in the amount of 2 to 100 times which has overlapping ranges with the instant application (column 6). The mixture of substrate particles, water, alcohol, metal compound, catalyst and more are heated to the reflux temperature and stirred for the process to take place; furthermore, based on the amount of water, from 3 to 40 volume % of ammonium is added as well (column 6, lines 40-65).

12. Regarding claims 39-43, Schmid et al. disclose the use of said pigment composition in many sectors of the industry, for example, in automotive coatings, decorative coatings, plastics pigmentation, paints, printing inks, glass, ceramic products, and especially cosmetics (column 1, lines 50-58). Although the reference does not

expressly disclose which specific cosmetic formulation may utilize said pigment composition, it is well settled in the art that the many products recited in claim 43 would fall within the cosmetic industry.

Response to Amendment

13. Applicants' amendment to claim 1, filed February 27, 2008, page 3, by amending the claim to include the thickness of the aluminum oxide/hydroxide layer is acknowledged. However, the amendment is not sufficient to place the application in condition for allowance.

14. Applicants' amendment to claim 41, filed February 27, 2008, page 9, by changing the dependency of said claim is acknowledged. However, the amendment is not sufficient to place the application in condition for allowance.

Response to Arguments

15. Applicant's arguments filed February 27, 2008 have been fully considered but they are not persuasive.

16. Applicants have argued that Schmid et al. do not disclose a pigment having soft color flop.

The Examiner, respectfully, submits that the reference, as given a closer consideration, disclose a substantially similar process of producing said pigment which

results in a pigment having substantially similar structure; therefore, any recited properties, such as soft color flop, is considered to assumed to be accompanied by the disclosed pigment composition.

17. Applicants have argued that the Schmid et al. do not anticipate the aluminum oxide thickness of 70-300 nm claimed by the instant application which is also much greater than the thickness naturally occurred on the aluminum.

The Examiner, respectfully, submits that claim 1 has been rejected under Title 35 U.S.C. 103(a) as being unpatentable over Schmid et al. in view of Andes et al.; thus, claims of instant application are no longer considered anticipated by Schmid et al. Furthermore, the broad range of aluminum oxide thickness of 50-600 nm has overlapping ranges with the instant claim. As noted above, overlapping ranges have been held to establish *prima facie* obviousness.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 5,964,936 to Reisser

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jerry A Lorengo/
Supervisory Patent Examiner, Art Unit 1793

/P. P./
Examiner, Art Unit 1793